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BACTERIAL FLORA OF NOSE AND THROAT IN
HEALTH AND UPPER RESPIRATORY
INFECTION

G. S. SHIBLEY, F. M. HANGER, AND A. R. DOCHEZ

In searching for the causative agent in respiratory disease, the problem is seriously complicated by the fact that the nose and throat normally harbor a variety of bacteria, some constantly present and others more or less transient. Correct interpretation, therefore, of the importance of organisms found in respiratory disease is dependent upon comprehensive familiarity with the bacterial flora in health. In the present study, a preliminary in an investigation of the common cold being undertaken by us, observations have been made of the bacterial flora of the nose and throat in a group of normals over a comparatively long period, and qualitative and quantitative changes occurring in the course of upper respiratory infections appearing in the group have been noted.

Thirteen individuals were studied for periods ranging from five to nine months. Aerobic and anaerobic cultures were made from the nose and throat infections weekly in health, and daily in the course of colds and throat infections. All organisms present were carefully identified and their prominence noted.

Our results may be summarized briefly as follows: The normal basic nasal flora includes *staphylococcus albus*, diphtheroids, and for certain individuals *staphylococcus aureus* and *citreus*; occasional transients are gram-negative cocci and non-hemolytic streptococci. The normal basic throat flora includes gram-negative cocci, non-hemolytic streptococci, and for certain individuals large gram-positive cocci, *B. pfeifferi*, both non-hemolytic and hemolytic, and diphtheroids; transients are *staphylococcus albus*, *staphylococcus aureus*, hemolytic streptococci, *staphylococcus citreus* and pneumococci.

Certain of these organisms have been assumed to play pathogenic roles. Such so-called potential pathogens are hemolytic streptococci, *staphylococcus aureus*, pneumococci, and *B. pfeifferi*. In the nose, hemolytic streptococci were found once without associated untoward symptoms. In the throat, hemolytic streptococci had a high incidence in four cases, of whom two had no associated symptoms and two had more or less continuous sub-acute inflammation of their throats. *Staphylococcus aureus* was high in one case and prominent in her colds. Pneumococci were associated with a mild sore throat in one case and no symptoms in another. High incidence of *B. pfeifferi*, both hemolytic and non-hemolytic, was not accompanied by any apparent increase in respiratory infection.

In the course of colds a number of changes from the normal were noted. In the nose there was a tendency toward scantiness of growth in the early cultures and the basic flora was decreased; in the throat the usual prominence of gram-negative cocci was less marked and there was a moderate increase in the prominence of non-hemolytic streptococci. In both nose and throat there was an increase in the incidence of the so-called potential pathogens. In the nose hemolytic streptococci and *B. pfeifferi* showed increases which were due entirely to late secondary spread. In the throat, *staphylococcus aureus*, hemolytic streptococci, and *B. pfeifferi* went up; in the case of the two former this was due to secondary spread. The increase of *B. pfeifferi* was due mainly to the fact that the organism was widespread, in normals as well, at the time of most of our colds (late winter and spring). It also played an important part as a late secondary invader.

No bacteria were found in the first or in early cultures to which an etiological role could be attributed. The indications are that the so-called pathogens noted above probably play a secondary role in the type of upper respiratory infection under investigation.

Cultures taken during sore throats showed the expected increase, in the throat, of hemolytic streptococci (from 17 per cent. in normals to 56 per cent. during infection).

DISCUSSION BY DR. FREDERICK L. GATES

The admirable presentation of this orderly and illuminating study has left nothing for me to add which is not obvious to all of you. Is it not extraordinary that two contiguous internal surfaces such as the nasal mucosa and the nasal pharynx should continuously support such a different bacterial flora? Since the common source of infection is presumably the inspired air, it seems certain that these two surfaces represent environmental conditions which would account for this difference. This investigation was undertaken as an introduction to a study of common colds. I do not know the hypothesis which stimulated it but it is evident that the authors did not expect to find the etiological agent of common colds among the ordinary aerobic flora of the nose and throat. We must admire the patience and the labor with which they have built so solid and useful a ground work for further studies.

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THE PRESENT STATUS OF PLASTIC SURGERY IN
FRANCE

LEON DUFOURMENTAL, M.D.

Laryngologist to the Pereire Hospital, Paris; Professor of Facial
Surgery in the Dental School of France.

A lecture in English, even on a familiar subject, is for me an unusual experience, but the welcome I have received in the past month encourages me to hope you will excuse my errors. I came to the United States on an official mission from my government, to inquire into the position of plastic surgery here. Incidentally, as on this evening, I have endeavored to make known its status in France.

There are only a few of us in France who practice this surgery; as one of those who do so, I have been chosen for this